



# NEON® Personnel Tracker DHS OpEx Case Study

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## Summary

In December 2018, TRX’s NEON Personnel Tracker Solution provided seamless indoor and outdoor personnel location and supported improved real-time situational awareness for more than 40 first responders in a simulated HAZMAT incident hosted by the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) at the Port of Houston, Texas.

At the two-day Next Generation First Responder (NGFR)-Harris County Operational Experimentation (OpEx), TRX’s Personnel Tracker Solution as well as other emergency response technologies demonstrated their improved coordinated emergency response during a simulated HAZMAT scenario that included more than 220 participants from 13 Houston-area public safety agencies and 20 industry partners.

*“TRX was proud to help DHS S&T improve situational awareness during the operation by providing actionable real-time location of all the first responders, allowing for efficient deployment of resources to the areas of highest risk.”*



- Laton Palmer, VP  
Market Development  
& Sales

## TRX Systems Information

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## TRX Systems Overview

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TRX Systems is the developer of the NEON® Indoor Location Solution, delivering location and mapping indoors, underground and in dense urban areas where GPS is not available or is unreliable. NEON delivers ubiquitous, low-cost, 3D indoor location through the use of advanced sensor fusion, ranging, and dynamic mapping algorithms.

TRX Systems got its start in technology research in the public safety market, responding to the need to safeguard public safety personnel when they are operating indoors where GPS doesn't work. Working with the public safety industry to solve this extremely important and challenging problem has enabled TRX Systems to develop state-of-the-art, cloud-based solutions based on patented technology that seamlessly locates public safety, military and industrial personnel both indoors and out, anywhere GPS is unavailable or unreliable.

The TRX team is made up of industry experts in sensor fusion, RF ranging, crowd-sourced map building, statistical modeling, control theory, and robotics. TRX has strong primary research expertise combined with strong product delivery capabilities. The company has a large portfolio of intellectual property, including 27 U.S. patents, 16 international patents, and 18 pending patents.



**Safety & Security**



**Commercial**



**Defense**

***Safety and productivity through indoor location. That's our mission at TRX.***

## Challenge

As of 2016, 81.7 percent of Americans live in urban areas, and urban responders have different technology needs and budgets than responders in rural areas. This statistic has led DHS S&T to partner with Houston-area public safety agencies, the U.S. Coast Guard, the Federal Emergency Management Agency (FEMA), and the DHS Office of Emergency Communications to identify technical capabilities that could assist first responders at the scene of an emergency in these areas. Situational awareness, responder physiological health, patient monitoring, real-time location tracking, and enhanced communications were identified as priority items for improvement.

Situational awareness was identified due to the ongoing issue that public safety personnel (e.g., law enforcement, firefighters, emergency medical technicians, and disaster response personnel) often work indoors, underground, and in other areas where GPS is denied or inaccurate. Knowing where personnel are located is essential for incident commanders to make decisions that ensure the safety of personnel, improve coordination within and between teams, and ultimately provide the best operational effectiveness. To obtain clear situational awareness, responder personnel need to understand the area in which personnel are operating and need accurate real-time location of personnel, even in buildings they are visiting for the first time. Responder personnel need an optimized common operating picture.

## Solution

DHS S&T held a two-day NGFR Operational Experimentation to address the priority concerns identified. The OpEx took place December 4<sup>th</sup>-5<sup>th</sup> at the Port of Houston, TX which involved 220 participants from 13 Houston-area public safety agencies and 20 industry partners.

DHS S&T hosted this OpEx to assess how commercial innovations, DHS-developed technologies, and existing first responder infrastructure could be integrated to improve incident response effectiveness during a real-world scenario. The DHS S&T NGFR program is focused on developing, adapting and integrating technologies to make first responders better protected, connected, and fully aware.



TRX was selected to provide mission critical personnel location for the OpEx and showcased NEON® Personnel Tracker, a 3D mapping and location solution that improves operational efficiency, command effectiveness, and safety for industrial, security, public safety, and defense applications. Personnel Tracker delivers seamless indoor and outdoor location, including delivery of real-time 3D location of personnel operating indoors, underground, and in other GPS-denied environments.

NEON Personnel Tracker delivers location in both 2D and 3D and provides tracking and visualization of personnel in complex indoor and outdoor environments. Accurate tracking is accomplished using NEON's patented location algorithms which leverage all available device sensors including inertial, magnetic, pressure, light, Bluetooth, Wi-Fi and GPS signals (where available) to calculate location.

NEON is the first location solution to deliver the precision and seamless coverage required during mission critical operations in for first responders, soldiers, and security personnel, particularly in GPS denied environments. NEON is unique in the ability to use very small and low-cost sensors along with mapping algorithms that use inferred and known map & Terrain data to deliver accurate and reliable 3D location in buildings with little or no infrastructure installed.

The experiment scenario included a simulated chemical spill from a ship in the port. This scenario allowed for testing technologies that included physiological monitoring sensors, GPS denied location tracking, HAZMAT sensors, smart alerting for responders and incident command, advanced data analytics, data hubs, next generation dedicated communications, and situational awareness dashboards.

